Figure 1. Amino acid alignment of soybean CDPKa (SEQ ID NO: 2) and CDPKb (SEQ ID NO: 4), maize CDPK (L27484, SEQ ID NO: 23) and Arabidopsis CDPK (U20388, SEQ ID NO: 24)

```
U20388          MANKPRTRWVLPYKTKNVEDNYFLGQVLGQGQFGTTFLCTHKQTGQKLACKSIPKRKLLC
CDPKb           ------------------------------------------------------------
L27484          --------------MEDVRATYSMGKELGRGQFGVTHLCTHRTSGEKLACKTIAKRKLAA
CDPKa           ------------------------------------------------------MTT


U20388          QEDYDDVLREIQIMHHLSEYPNVVRIESAYEDTKNVHLVMELCEGGELFDRIVKRG-HYS
CDPKb           ------------------------------------MELCAGGELFDRIIQRG-HYT
L27484          REDVDDVRREVQIMHHLSGQPNVVGLRGAYEDKQSVHLVMELCAGGELFDRIIARG-QYT
CDPKa           AIAIEDVRREVKILRALTGHKNLVQFYEAYEDDDNVYIVMELCKGGELLDRILSRGGKYS
                                                    **** ****:***: ** :*:


U20388          EREAAKLIKTIVGVVEACHSLGVVHRDLKPENFLFSSSDEDASLKSTDFGLSVFCTPGEA
CDPKb           ERQAAKLTKTIVGVVEACHSLGVMHRDLKPENFLFVNQHEDSLLKTIDFGLSVFFKPGDI
L27484          ERGAAELLRAIVQIVHTCHSMGVMHRDIKPENFLLLSKDEDAPLKATDFGLSVFFKEGEL
CDPKa           EEDARVVMIQILSVVAFCHLQGVVHRDLKPENFLFTSKDDKSTLKAIDFGLSDYVKPDER
                *. *  :   *: :*  **  **:***:******: ...:.: **: ***** : . .:


U20388          FSELVGSAYYVAPEVLHKHYGPECDVWSAGVILYILLCGFPPFWAESEIGIFRKILQGKL
CDPKb           FNDVVGSPYYVAPDVLRKRYGPEADVWSAGVILYILLSGVPPFWAENEQGIFEQVLRGDL
L27484          LRDIVGSAYYIAPEVLKRKYGPEADIWSVGVMLYIFLAGVPPFWAENENGIFTAILRGQL
CDPKa           LNDIVGSAYYVAPEVLHRSYGTEADMWSIGVIAYILLCGSRPFWARTESGIFRAVLKADP
                : ::***.**:**:**:: **.*.*:** **: **:*.*  ****..* ***  :*:..


U20388          EFEINPWPSISESAKDLIKKMLESNPKKRLTAHQVLCHPWIVDDKVAPDKPLDCAVVSRL
CDPKb           DFSSDPWPSISESAKDLVRKMLVRDPRRRLTAHQVLCHPWIQVDGVAPDKPLDSAVLSRL
L27484          DLSSEPWPHISPGAKDLVKKMLNINPKERLTAFQVLNHPWIKEDGDAPDTPLDNVVLDRL
CDPKa           SFDEAPWPSLSVDAKDFVKRLLNKDYRKRLTAAQALSHPWLVNHHDDMRIPLDMIIHKLV
                .:.  *** :* .***:::::*  : :.**** *.* ***:  .      ***  : . :


U20388          KKFSAMNKLKKMALRVIAERLSEEEIGGLKELFKMIDTDKSGTITFEELKDSMRRVGSEL
CDPKb           KQFSAMNKLKKMALIIIAESLSEEEIAGLKEMFKMIDADNSGQITFEELKAGLKRVGANL
L27484          KQFRAMNQFKKAALRIIAGCLSEEEITGLKEMFKNIDKDNSGTITLDELKHGLAKHGPKL
CDPKa           KAYICSSSLRKSALRALAKTLTVAQLAYLRDQFTLLGPNKSGLISMQNFKTAVLRSSTDA
                * : . ..::* **  :*  *:  ::  *:: *. :. ::** *::::* .: : ...


U20388          M-ESEIQELLRAADVDESGTIDYGEFLAATIHLNKLE----REENLVAAFSFFDKDASGY
CDPKb           K-ESEIYDLMQAADVDNSGTIDYGEFLAATLHRNKIE----REDNLFAAFSYFDKDGSGY
L27484          S-DSEMEKLMEAADADGNGLIDYDEFVTATVHMNKLD----REEHLYTAFQYFDKDNSGY
CDPKa           SKDSRVLDYVSMVSSIQYRKLDFEEFCAAAISVHQLEGMETWEQHARHAYELFKKEGNRP
                  :*.: . :  ..      :*: ** :*::  ::::     *::   *:. *.*: .


U20388          ITIEELQQAWKEFGINDS-NLDEMIKDIDQDNDGQIDYGEFVAMMRKGNGTGGGIGRRTM
CDPKb           ITQEELQQACDEFGIKDV-RLEEIIKEIDEDNDGRIDYNEFVAMMQKGN--LPAVGKKGL
L27484          ITKEELEHALKEQGLYDADKIKDIISDADSDNDGRIDYSEFVAMMRKGT---AGAEPMNI
CDPKa           IMIEELAS---ELGLSPSVPVHVVLQDWIRHSDGKLSFLGFVRLLH-------GVSSRAF
                *  ***     * *:     :. ::.:   ..**::.:  ** :::       .     :


U20388          RNSLNFGTTLPDESMNV
CDPKb           EN--SFSVKFR-EALKL
L27484          KK--RRDIVL-------
CDPKa           QKA--------------
                .:
```

Figure 2: 5' Flanking Region of the soybean AMPD gene (SEQ ID NO: 5) showing the TATA box and first ATG codon in bold face type.

GGCTTGTAATACGACTCACTATAGGGCACGCGTGGTCGACGGCCCGGGCTGGTCTGACATTCTGAGGAAAGAGCC
AGAGCATGAAACTTTCACAAGATTGAGAATAACTCCTCTTGGTATGAACTCTGACATGTTACTCTTCCTCATTCT
CTTGAGTGCAAAGAAATTGCTTTGAATGGGTTTTTCATGGGATGTRTAGAATCCCCCTCCTTCARACACTTGTTT
GATTACAATATTTGCATATCTGGAAAATTTATAGTAAACTATAATTGTTATATTTTTTGTTTAGAGGCTCCGTCA
CCTGATGAAATTGAAGCTTATGTGGTTCTGCAAGAATGCCTTGAAATGAGAAAAAGATATGTTTTTAGAGAAGCT
GTTGCTCCGTGGGATAAAGAAGTTATATCCGACCCCAGCACACCCAAGCCTAACCCAGATCCATTTTTATACATT
CCTGAAGGAAATTCTGATGTGAGTTTTTTTCTCCCACCACTGAAAACTTGGATCTCCCTATGTTATATGCTGTGA
TTAAATTAGTTGTATTTCTCTTGTGCTACAGCATTATTTTGAAATGCAAGATGGGGTTATTCGTGTATATCCAGA
TAGAGATGGTAAGTAACAGGAATTTGTTATTGATAAACTTGGTAATTTTATCACCACTCAAGGTGGGATCTTATG
CATGCTTGCCTATTACTTGCAGCAAAAGAAGAGCTTTTTCCTGTAGCTGATGCAACTACATTTYTCACYGATCTT
CATCACTTACTTCGAGTCATAGCAGCAGGGAA**TATAA**GAACTTTATGCCATCATAGGCTCAATCTTCTAGAACAA
GTACATCTCTAATTTACTGAAACAAACTGCAGCCTATGCTTGTATTTTAATTACATACAAGAATCAATTGTTGTT
TGACAATTTCTGTATTTTTCAGAAATTCAATCTTCATTTG**ATG**

Figure 3: Amino acid alignment of soybean NRTF1a (SEQ ID NO: 7), NRTF1b (SEQ ID NO: 9), with two *Arabidopsis thaliana* AP2 proteins, AJ001911 (SEQ ID NO: 31) and AF003096 (SEQ ID NO: 32), with the conserved AP2-domain indicated by underlining.

```
NRTF1b          MCGGAIISDFIGVK---RGRNLAAQELWSELDP--FSDFLGFDTTNSK--NQPPLQKIPD
NRTF1a          MCGGAIISDFIGVK---RGRNLAAQELWSELDP--FSDLLGFDTTTTTTTNQPP---LPD
AJ001911        MCGGAIISDYAPLVTKAKGRKLTAEELWSELDASAADDFWGFYSTSKL---H------PT
AF003096        MCGGAIISDYAPLVTKAKGRKLTAEELWSELDASAADDFWGFYSTSKL---H------PT
                *********:  :    :**:*:*:*******.   .*: ** :*..    :      *

AP2-2           KKVVSSCEKKKKSVVGAEKKKSDSGRARKNVYRGIRQRPWGKWAAEIRDPHKGVRVWLGT
AP2-1           KKVVSSCEKKKKKSVSAEKK-S-GGRARKNVYRGIRQRPWGKWAAEIRDPHKGVRVWLGT
AJ001911        NQVNVKEEEAVKKEQATEPGKR---RKRKNVYRGIRKRPWGKWAAEIRDPRKGVRVWLGT
AF003096        NQVNVK-EEAVKKEQATEPGKR---RKRKNVYRGIRKRPWGKWAAEIRDPRKGVRVWLGT
                ::*  . *:  *.  .:*       * *********:*************:*********

AP2-2           FPTAEEAAQAYDDAAIRIRGDKAKLNFPATTISAAA--APPPS-----------KKQRCL
AP2-1           FPTAEEAARAYDDAAKRIRGDKAKLNFPAT--------APPPS-----------KKQRCL
AJ001911        FNTAEEAAMAYDVAAKQIRGEKAKLNFPDLDHHPS---TPPPSSTSLRLSDQPPAKKVCV
AF003096        FNTAEEAAMAYDVAAKQIRGDKAKLNFPDLHHPPPPNYTPPPS--SPRSTDQPPAKKVCV
                * ****** *** ** :***:*******          :****            *: *:

AP2-2           SPDIITEESSSSSSHSTTGSTGE---SG---GGNDELDLKQ----IEWFLGLENELPVSN
AP2-1           SPDTTTEQSSSS--QSTTGSTGSP-PSAAFHGGGDELDLKQ----LERFLGLD-------
AJ001911        VSQSE--LAQPSFPVECVGFGKGEEFQNLMYGFEPDYDLKQQISSLESFLELDGTTAEQP
AF003096        VSQSESELSQPSFPVECIGFGNGDEFQNLSYGFEPDYDLKQQISSLESFLELDGNTAEQP
                 .:     :..*   .  *       .    *   : ****    :* ** *:

AP2-2           NIGAEWDNMDDLWMLDDVVVPNRHLIY
AP2-1           NMGAEWDNMDDLWMLDDVVVPNRHLIY
AJ001911        SQLDESVCDVDMWMLDDVIASYE----
AF003096        SQLDESVSEVDMWMLDDVIASYE----
                .   *     *:******:.. .
```

Figure 4: Amino acid alignment of soybean NRTF1a (SEQ ID NO: 7), NRTF1b (SEQ ID NO: 9), NRTF1c (SEQ ID NO: 11) and NRTF1d (SEQ ID NO: 13), with the conserved AP2-domain indicated by underlining.

```
NRTF1a-         MCGGAIISDFI--GVKRGRN-LAAQELWSELDP-FSDLLGFDTTTTTT---TNQPP---L
NRTF1b          MCGGAIISDFI--GVKRGRN-LAAQELWSELDP-FSDFLGFDTTNSK-----NQPPLQKI
NRTF1c_         MVSATVDSDFA--FLESVQQYLLGHDSINLMSE-THQAASHDPFSDP-----NKCD----
NRTF1d_         MVSATVDSDFA--FLESVQQYLLGHDSINLMSE-THQAASHDPFSDP-----NKCD----
                * ..:: ***          . : ..     :     .    *          :.

NRTF1a-         PDKKVVSSCEKKKK-------KSVSAEKK-S-G-------G-------RARKNVYRGIRQ
NRTF1b          PDKKVVSSCEKKKK-------SVVGAEKKKSDS-------G-------RARKNVYRGIRQ
NRTF1c_         GDSGNIAFRSEDAT-------AVVARDHA--------------------PPTWKHYRGVRR
NRTF1d_         GDSGNIAFRSEDAT-------AVVARDHA--------------------PQTWKHYRGVRR
                 *.      . . .          . .:                        : ***:*:

NRTF1a-         RPWGKWAAEIRDPHK-GVRVWLGTFPTAEEAARAYDDAAKRIRGDKAKLNFPAT------
NRTF1b          RPWGKWAAEIRDPHK-GVRVWLGTFPTAEEAAQAYDDAAIRIRGDKAKLNFPATTISAAA
NRTF1c_         RPWGKFAAEIRDPKKNGARVWLGTYDTEEKAALAYDKAAFKMRGQKAKLNFPHL------
NRTF1d_         RPWGKFAAEIRDPKKNGARVWLGTYDTEEKAALAYDKAAFKMRGQKAKLNFPHL------
                *****:*******:* *.******: * *:** *** ** ::**.*******

NRTF1a-         APPPSKKQRCLSPDTTTEQSSS--SQSTTGSTGSPPSAAFHGGGDELDLKQLERFLGLD-
NRTF1b          APPPSKKQRCLSPDIITEESSSSSSHSTTGSTGE--SG---GGNDELDLKQIEWFLGLEN
NRTF1c_         --IDSDNSDELSEPVMMTTSKR--SLLEISSPSS-------SCSDDSSESQ--GTKRRK-
NRTF1d_         --IDSDNSDELSEPVMMTTSKR--SLLEISSPSS-------SYSDDSSESQ--GTKRRK-
                    *.:   **       *.   *     *.  .       . . :   .

NRTF1a-         ------NMGAEWDNMDDLW----MLDDVVVPNRHLIY----------------------
NRTF1b          ELPVSNNIGAEWDNMDDLW----MLDDVVVPNRHLIY----------------------
NRTF1c_         -------SLAELLNKLAK-----NRSQVKVEC-----------------------------
NRTF1d_         -------SLAELLNKLAK-----NRSQVKVEC-----------------------------
```

Figure 5: Amino acid alignment of soybean NRP-1 (SEQ ID NO: 15) and NRP-2 (SEQ ID NO: 17) along with a tomato miraculin homologue (T07871, SEQ ID NO: 25) and tobacco tumor-related protein (T03803, SEQ ID NO: 26)

```
T03803          MKTNQLFLPFLIFTISFNSFLSSSAEAPPA-VVDIAGKKLRTGIDYYILP----VVRG--
T07871          MKINQLFFPFLILAISFNSLLSSAAESPPE-VVDIDGKILRTGVDYYILP----VVRG--
NRP-1           -MKTKLLAFLLFFALTTKPLLLGAAGAAPEPVIDTSGKKLRADANYHIIPAVPFTICGFV
NRP-2           MKSTMLLAFALVLALSSQP-LLGGAEASPEQVVDTLGKKLRVGTNYYIVPSLPYTKIR--
                   . *:   *.:::: :. * ..* :.*  *:*  ** **.. :*:*:*    .

T03803          ---RGGGLTLDSTGNESCPLDAVVQEQQEIKNGLPLTFTPVNPKKGVIRESTDLNIKFS-
T07871          ---RGGGLTMDSIGDKMCPLDAVVQEHNEIDQGLPLTFTPVDPKKGVIRESTDLNIIFS-
NRP-1           SCFTGGGLSLDSIDES-CPLDVIIEKAN---EGLPLRFSPVNTKKGVIRVSTDLNIFFSD
NRP-2           ---TTRGLGLASVGKPYCPLDVVVVNGY---HGLPVTFSPVNPKKGVIRVSTDLNIKFS-
                      ** : * ..  ****.:: :     .***: *:**:.****** ****** **

T03803          AASICV--QTTLWKLDDFDETTGKYFITIGGNEGNPGRETISNWFKIEKFERDYKLVYCP
T07871          ANSICV--QTTQWKLDDFDETTGQYFITLGGDQGNPGVETISNWFKIEKYDRDYKLLYCP
NRP-1           SDERCP-HHSTVWMLDQFDASIGQTYVTTGGVVGNPGEHTILNWFKIQKYEDAYKLVYCP
NRP-2           ARTSCPRQYSTVWKLDDFDFSKRQWFVTTGGVVGNPSLETIHNWFKIEKYDGAYKLVYCP
                :   *    :* * **:** :  : ::* **  ***. .** *****:*::  ***:***

T03803          TVCNFCKVICKDVGIFIQDGIR-RLALSDVPFKVMFKKAQVVKD
T07871          TVCDFCKVICRDIGIFIQDGVR-RLALSDVPFKVMFKKA-----
NRP-1           RVCPSCHHLCKDIGMFVDANRRMHLALSDDPFKIKFKEA-----
NRP-2           SVVKCPKHLCKNVGLFVDEKGNKRLALTDVPLKVQFQQA-----
                 *    : :*:::*:*::   . :***:* *:*: *::* .
```

Figure 6: Amino acid sequence alignment of soybean 7OM sequence (SEQ ID NO: 19) compared to maize 7OM (L14063, SEQ ID NO: 27) and *Medicago* 7OM (AF000975, SEQ ID NO: 28)

```
AF000975        MASSINGRKPSEIFKAQALLYKHIYAFIDSMSLKWAVEMNIPNIIQNHGKPISLSNLVSI
7OM             MASMNN-QKEIELFEGQSLLYMQLYGHLRPMCLKWAVQLGIPDIIQNHAKPISLSDLVST
L14063          MELSPNNSTDQSLLDAQLELWHTTFAFMKSMALKSAIHLRIADAIHLHGGAASLSQILSK
                *    *  .  .::..*  *:   :..: .*.** *:.: *.: *: *. . ***:::*

AF000975        LQVPSSKIGNVRRLMRYLAHNGFFEIITK----EE---ESYALTVASELLVRG--SDLCL
7OM             LQIPPANAAFVQRFMRFLAHNGIFEIHES----QEDHELTYALTPASKLLVNS--SDHCL
L14063          VHLHPSRVSSLRRLMRVLTTTNVFGTQPLGGGSDDDSEPVYTLTPVSRLLIGSQSSQLAQ
                ::: .:. . ::*:** *: ...*         ::     *:** .*.**: .  *: .

AF000975        APMVECVLDPTLSGSYHELKKWIYEE--DLTLFGVTLGSGFWDFLDKNPEYNTSFNDAMA
7OM             SPMVLAFTDPLRNVKYHHLGEWIRGE--DPSVFETAHGTSAWGLLEKNPEYFSLFNEAMA
L14063          TPLAAMVLDPTIVSPFSELGAWFQHELPDPCIFKHTHGRGIWELTKDDATFDALVNDGLA
                :*:.  . **     : .*  *:  *  *  :*  : * . * : ..:. : : .*:.:*

AF000975        SDS-KLINLALRDCDFVFDGLESIVDVGGGTGTTAKIICETFPKLKCIVFDRPQVVENLS
7OM             SDS-RIVDLALKNCTSVFEGLDSMVDVGGGTGTTARIICDAFPKLKCVVLDLPHVVENLT
L14063          SDSQLIVDVAIKQSAEVFQGISSLVDVGGGIGAAAQAISKAFPHVKCSVLDLAHVVAKAP
                ***  ::::*:::.  **:*:.*:****** *::*: *..:**::** *:* .:** : .

AF000975        GSNNLTYVGGDMFTSIPNADAVLLKYILHNWTDKDCLRILKKCKEAVTNDGKRGKVTIID
7OM             GTNNLSFVGGDMFNSIPQADAVLLKWVLHNWTDENCIKILQKCRDSISSKGNSGKVIIID
L14063          THTDVQFIAGDMFESIPPADAVLLKSVLHDWDHDDCVKILKNCKKAIPPREAGGKVIIIN
                  .:: ::.**** *** ******* :**:* ..:*::**::*:.::.     *** **:

AF000975        MVIDEKKDENQVTQIKLLMDVNMACLNGKERNEEEWKKLFIEAGFQHYKISPLTGFLSLI
7OM             AVINEKLDDPDMTQTKLSLDIIMLTMNGRERTEKEWKQLFIEAGFKHYKIFPIFGFRSLI
L14063          MVVGAGPSDMKHKEMQAIFDVYIMFINGMERDEQEWSKIFSEAGYSDYRIIPVLGVRSII
                 *:.   .: . .: :  :*: :  :** ** *:**.::* ***:..*:* *: *. *:*

AF000975        EIYP----
7OM             EVYPXTFL
L14063          EVYP----
                *:**
```

Figure 7. Amino acid sequence alignment of soybean and *Arabidopsis* IPP proteins (SEQ ID NOs: 21 and 29, respectively).

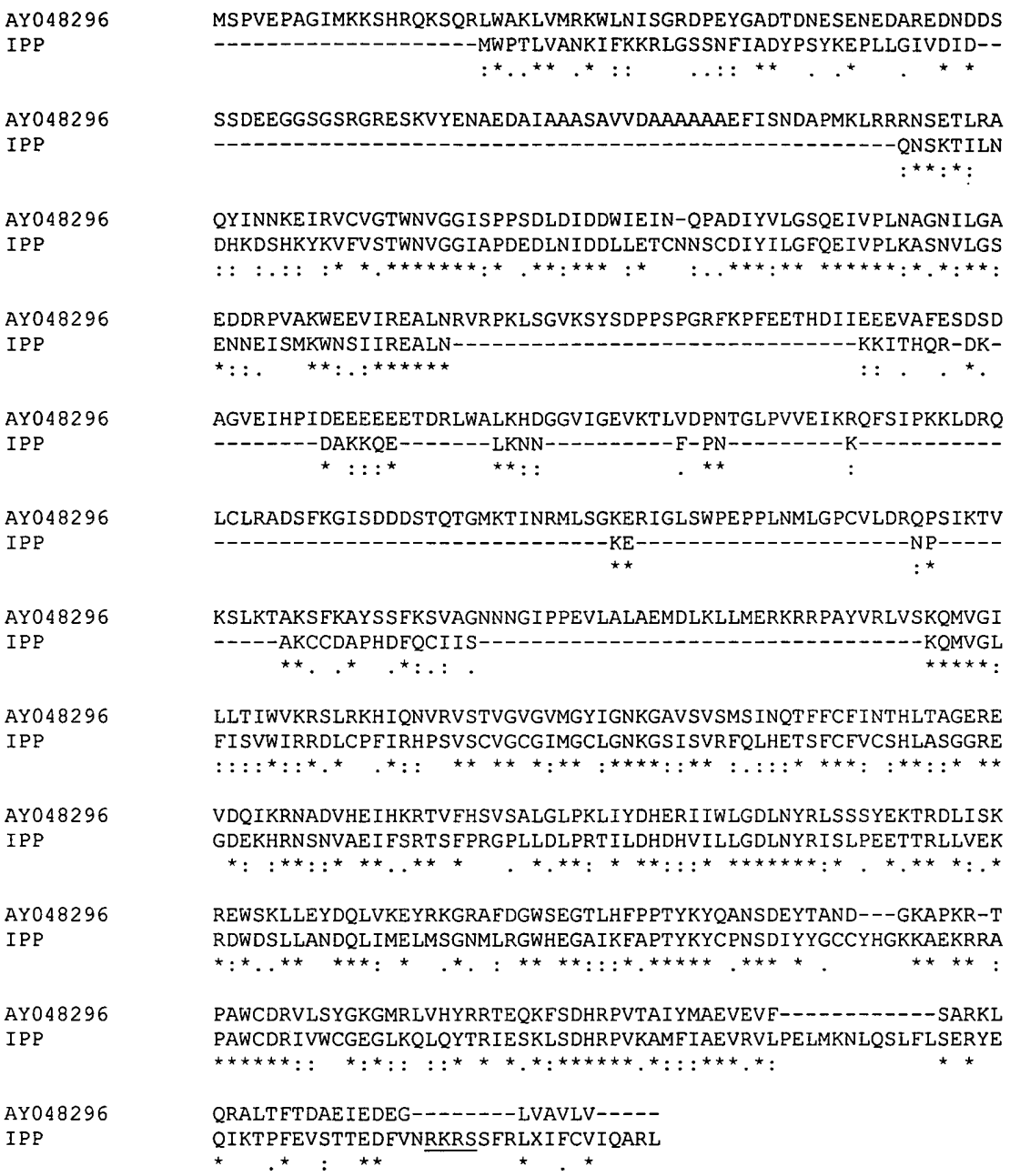

Figure 8: 5' Flanking Region of the soybean IPP gene (SEQ ID NO: 22) showing the TATA box and first ATG codon

AGCACCATCATCTCTATCATTCGGAATGCAACCAAGCTAAAAGATTACTACAACTAATTGCTTTTCCTTATCACA
TTTTCTGACGTATAGTGTGATTTTATATATTTTTACATAAGAGAAATAATTTCTACAAAAAAAATGTTCGATAAA
ATAAGTAGAGAACGTGTATTAATAATTTCTACATAAGAAATAAAGAAATATATTAGATATAATAAGTGATGCAAG
AAAGATGGACAAAAATAATTACGTAAATATCATTCTATAAATTTATTATTCATTATATAAATAGCATTACCATTG
TTGAAACTTGAAAGTGGGTCCATCGTTTACAACTAAAGAAAGACACCCTAGCGTAAAATATTCAACCATCGACGT
CTACTTCAATTAACATGAAGATGTAGTTCCATCTCAACGGATTTCCGTCTCAAATAAAATTCTTAATAACGTGCT
ACTAACCATTGGAATCTGCAGAATATCTCGTTTAGTTGGGCACAATCCCTCAAAAGCGATGTATTTTTTTAATGG
AAACAATGCATGCCACAAGAACGTTTATATATACATAATTTTACTAAACAAATCGTAATACAAAACTTTATTATT
ATAACGTGATTTGTCACTTTTTGCTTCAGAAAAATACTTTGTACAAAACATTAAGACAATAACATAAGTTGCCAA
TACCATACATAAAACTCTTTAATGAATCATAATGATGAAAATTGAGAGATATTTAGTTCCATGATAAAGAGTGTG
TTTGTGTGGGAATTTGACCAAACGCAATTGTTGTTCCAGTGAAAACTTTTCTCGCGTGTTTGGCCTTTTGTGTCT
CAGAAAGCTAATTTTCTCCATTTAACGTGGTTTGGACCCATTTTCAAACGCACTCACAGTGAGTCCGTTTCTGTA
GAAGTCCTTCCAGCAGGCCACCCCTCCCCCAAAGAAAAATTTAAGAAACAAGAAGAGAAAGAAAAAAAGAAAAAG
AAAAAACAAGTCACATATTTTATTCTTATGTCAGCCAAAAACTTGACTAGCTGTAGATGGGGCAATAATAACTAG
CTATTCATCACATTTCCTAGCTAATTGCCTGTTTTGTTATGGACCACATTCCCACTTGCACTCATCTTCAGCAAT
TTAAATTAGGTAATAAACATTAAGATATCCTTTAAAATCTACTCAACAAACAGAAGAATTCAAATCTGCAAGAAG
GGTAGACCCATGTTTTATACTAGCTTTCTCTATCTCTCTCCCACTGGGACATAAATGTTCCTATATTTCAAAAAA
TATATATATGATATGATGAGCAATGCAGCCAAAGGTGCATCATCTTTTACGTCACATGAAAGCCTTTCCTACCTC
TTCAAGCTGCACAAGCCTTTCTCTTTCCCAGAATGATTTTTTTCCATTTCTTGTTATTATTACTCCTTTTGGACT
TTCTATATAATGCTTTCTATATACGTTTCCAA**TAATA**CCACGTACACTACTCATGTGCCAGGAAAAGGAGCAGCA
GTGACCACCTAGCAATAGTACTCTCGCCTTCTCTCAATCATTTTTCATTTGTCAACTTTTATAGACCTCGATTTG
TGTATGCAAATTTCTTTAGGAC**ATG**